

Microminiature Gauging Displacement Sensor

Abstract

A device for providing displacement information includes a housing holding a displacement sensor. The displacement sensor includes a coil and a captive core. An electrical measurement of the coil provides information about displacement of the core. The coil has an axis extending in a first direction, wherein the housing has a minimum outside dimension that is less than 3.00 mm when measured perpendicular to that first direction. The housing has an inner surface having a housing inside dimension. The housing is for holding a displacement sensor and a guidance mechanism. The displacement sensor includes a coil and a captive core having a core outside dimension. The guidance mechanism includes a first part and a second part for guiding the core. The first part includes a bearing connected to the housing. The bearing has an axial hole having a hole dimension about equal to the core outside dimension. The core slidably extends through this axial hole. The second part has a second part outside dimension about equal to the housing inside dimension. The guidance mechanism is for resisting lateral movement and lateral rotation of the core while allowing axial movement of the core into and out of the coil.